

**Constitution of Comprehensive Dam
Safety Review Panels as per Dam
Safety Act-2021 for comprehensive
dam safety evaluation of Specified
Dams.**

Government of Maharashtra

Water Resources Department

G.R.No MISC-2023/(652)/IMW

Mantralaya, Mumbai-400 032

Date - 23/06/2025

Ref : 1. Dam Safety Act-2021

2. List of empanelled dam safety experts (NDSA) published by Central
Water Commission on Website <https://cwc.gov.in>

Preamble :

The Dam Safety Act, 2021 was published in the official Gazette of India on 14.12.2021 & has come into effect from 30.12.2021.

As per clause 38 of Dam Safety Act-2021, the owner of a specified dam shall make or cause to be made comprehensive dam safety evaluation of each specified dam through an independent panel of experts constituted as per regulations for the purpose of determining the conditions of the specified dam and its reservoir. Provided that the first comprehensive dam safety evaluation for each existing specified dam shall be conducted within five years from the date of commencement of this Act, and thereafter the comprehensive dam safety evaluation of each such dam shall be carried out at regular intervals as may be specified by the regulations.

The comprehensive dam safety evaluation of a specific dam consists of.

- a) Review and analysis of available data on the design, construction, operation, maintenance and performance of the structure;
- b) General assessment of hydrologic and hydraulic conditions with mandatory review of design floods as specified by the regulations;
- c) General assessment of seismic safety of specified dam with mandatory site specific seismic parameters study in certain cases as specified by the regulations;
- d) Evaluation of the operation, maintenance and inspection procedures; and
- e) Evaluation of any other conditions which constitute a hazard to the integrity of the structure;

As per Clause 40(3) of Dam Safety Act-2021,

Where the safety evaluations undertaken under section 38 or section 39, results in recommendations for a remedial action, the State Dam Safety Organisation shall pursue with the owner of the specified dam to ensure that remedial measures are carried out in time, for which the owner shall provide adequate funds.

Maharashtra has the highest number of specified dams in India. Out of 2673 Specified Dams in Maharashtra, 2157 are owned by the State Water Resources Department, 460 are owned by State Soil & Water Conservation Department, 55 are owned by other govt. Departments as well as State PSUs, Municipal Corporations, Municipal Councils, Companies, institutes & one has private ownership. For carrying out comprehensive dam safety evaluation of these 2157 Specified dams under Jurisdiction of State Water Resources Department, it is necessary to constitute independent panel of experts as per Guidelines for Safety Inspection of Dams, Jan. 2018. Hence Govt. of Maharashtra has taken the following decision.

Government Resolution :

1. Comprehensive Dam Safety Review Panels :-

1.1) For Comprehensive Dam Safety Evaluation of Specified Dams under jurisdiction of State Water Resources Department, following Dam Safety Review Panels are constituted.

1) Comprehensive Dam Safety Review Panel -1 (**CDSRP-1**): This panel will review specified dams under jurisdiction of Maharashtra Krishna Valley Development Corporation, Pune.

2) Comprehensive Dam Safety Review Panel -2 (**CDSRP-2**): This panel will review specified dams under jurisdiction of Vidarbha Irrigation Development Corporation, Nagpur.

3) Comprehensive Dam Safety Review Panel -3 (**CDSRP-3**): This panel will review specified dams under jurisdiction of Godavari Marathwada Irrigation Development Corporation, Chhatrapati Sambhajnagar - Chief Engineer, Water Resources, Chhatrapati Sambhajnagar.

4) Comprehensive Dam Safety Review Panel -4 (**CDSRP-4**): This panel will review specified dams under jurisdiction of Godavari Marathwada

Irrigation Development Corporation, Chhatrapati Sambhajinagar. Chief Engineer & Chief Administrator, CADA, Chhatrapati Sambhajinagar.

5) Comprehensive Dam Safety Review Panel -5 (**CDSRP-5**): This panel will review specified dams under jurisdiction of Tapi Irrigation Development Corporation, Jalgaon & Chief Engineer, NMR, Nashik.

6) Comprehensive Dam Safety Review Panel -6 (**CDSRP-6**): This panel will review specified dams under jurisdiction of Konkan Irrigation Development Corporation, Thane.

1.2) Details of panel wise experts/members for the Comprehensive Dam Safety Review Panels constituted for State Water Resources Department projects are as per **Annexure-I**.

1.3) For Dams owned by Departments /Organisations other than Water Resources Department, such as Water Conservation Department, MIDC, MJP, Municipal Corporations and other Private Dam Owners, the CDSRP shall be constituted by these Departments / Organisations separately and independently based on the guidelines given in this Government Resolution. Also, the Private Dam owners shall also constitute their own CDSRP based on the guidelines given in this Government Resolution or by Central Water Commission (CWC), New Delhi.

1.4)The Dam Owners of all Private Dams are solely responsible for the constitution of CDSRP for their Dams and Water Resources Department, Government of Maharashtra is not responsible for the constitution of CDSRP for any of the Private Dams in Maharashtra.

1.5) Private Dam Owners can also choose to take services of Comprehensive Dam Safety Review Panels(CDSRP) formed by State Water Resources Department by making payment for the services of Comprehensive Dam Safety Review Panels(CDSRP) and depositing the necessary fees in advance.

1.6) However, since the dam owners other than Water Resources Department may have dearth of officials who have knowledge of, and adequate qualification, experience and capacity in dealing with problems relating to dam engineering and dam safety management, support of WRD officials such as field Chief Engineer/ Superintending Engineer/ Executive Engineer of that concerned region where the dam is located may be necessary. Hence, a necessary

handhold with matters related to Dam Safety shall be provided by WRD officials till formation of such CDSRP.

2. Important provisions of Comprehensive Dam Safety Review panels:

- 2.1) Tenure of Comprehensive Dam Safety Review Panel will be five years from date of issue of this Government Resolution.
- 2.2) If due to any reason, any member of the panel resigns or due to some other reason place of a member in the panel remains vacant, another member will be appointed by Govt. of Maharashtra.
- 2.3) If chairman of any CDSRP is temporarily unavailable, the other senior most member of that CDSRP will act as a chairman for this temporary period.

3. Reports of Comprehensive Dam Safety Evaluation

Separate report shall be prepared by CDSRP for each inspected dam, and shall include, but not limited to :

- a) The outlines of Comprehensive Dam Safety Evaluation report should include these Chapters.
 - i) Description of dam and its operation,
 - ii) Evaluation of Design, Construction and Analysis details,
 - iii) Inspection, Testing and Examination Details,
 - iv) Hydrologic Evaluation,
 - v) Seismic Evaluation,
 - vi) Instrumentation Evaluation,
 - vii) Risk Consequences,
 - viii) Future Performance Monitoring,
 - ix) Recommendations; issues for short material testing, Physical Modelling, Advanced Modelling etc.
 - x) Key Records/Information/Reports,
 - xi) Key Drawings-original and modified.
 - xii) Relevant photographs and detail of videos
- b) Recommendations of CDSRP may also include:
 - i) any emergency measures or actions, if required, to assure the immediate and longterm safety of the structure.
 - ii) remedial measures and actions related to design, construction, operation, maintenance, monitoring and evaluation, and inspection of the structure, if required.
 - iii) additional detailed studies, investigations, and analyses, if required.

- iv) recommendations for improvements in routine maintenance and inspection of dam, if required.
 - v) short-term and long-term risk reduction measures (structural as well as nonstructural), and comments on time frame for their implementation.
- c) After dam inspection visit by CDSRP, a wrap up meeting shall be arranged by dam owner, wherein concerned Chief Engineer/Dam Owner, and his/her entire team dealing with dam matters shall attend. In case of unscheduled dam safety inspection i.e. unusual flood event or seismic event, wrap up meeting shall be arranged with concerned Secretary or higher rank official in case of Water Resources Department, or with CMD in case of Public Sector Undertakings or with highest authority in case of private owner to appraise critical issues experienced by the CDSRP.
- d) The report shall be prepared by CDSRP team jointly within ten days after completing the visit, and each report shall be submitted to the Water Resources Department and Dam Safety Organization of the State as well as further onward transmission. During every visit at least one day shall be specially reserved for report writing to fulfil the target prescribed in the act.
- e) In case final report submission by CDSRP needs more time, an Interim Report highlighting various important issues needs to be submitted within Two Weeks from the date of dam inspection visit and final report submission may be discussed with concerned Dam Owner and with SDSO / CDSO.

4. Terms of references of the Comprehensive Dam Safety Review Panel (CDSRP 1 to 6) will be as follows.

- 4.1) Comprehensive Dam safety Review Panels shall carry out Comprehensive Dam safety evaluation as per clause 38 of Dam safety Act-2021.
- 4.2) Comprehensive Dam Safety Review Panels shall undertake periodic comprehensive inspection, review as specified in the act and rules, subsequently with the objective of evaluating features and actions pertaining to the safety of the dams and provide recommendations and expert advice on remedial measures (e.g. materials, specifications, methodology, etc) to the State Government as per provisions of the Dam Safety Act-2021.
- 4.3) CDSRP shall inspect and review the safety of dams assigned to them or in the case of emergency, any others dam as and when intimated by field Chief Engineer / Superintending Engineer.
- 4.4) The CDSRP shall prepare the inspection reports as per latest format and guidelines issued by National Dam Safety Authority and / or CWC, relevant legislation/standards/guidelines, etc. in the most professional and comprehensive manner.

- 4.5) The CDSRP shall also opine on the reports of studies or investigations undertaken by the field authorities or the department and suggest remedial measures.
- 4.6) The CDSRP shall also recommend techno-economic adoptable measures for short term/ long term safety /functioning of the dam which may include
- i) Any emergency measures or actions, if required, to assure the immediate and long-term safety of the structure.
 - ii) Remedial measures and actions related to design, construction, operation, maintenance, monitoring and evaluation, and inspection of the structure, if required.
 - iii) Additional detailed studies, investigations and analyses, if required.
 - iv) Recommendation for improvements in routine maintenance and inspection of dam, if required.
 - v) Short-term and long-term risk reduction measures (structural as well as non-structural) and comments on time frame for their implementation.
- 4.7) The CDSRP shall also prepare presentation on the inspected dams, and submit summary of activities including highlighting important points and shall attend meetings with higher officials of GoM.
- 4.8) Comprehensive Dam Safety Review Panels shall review and inspect specified dams as per Comprehensive Dam Safety review procedures mentioned in chapter 10 Comprehensive Dam Safety review from Guidelines For Safety Inspection of Dams, January 2018, published by Central Water Commission, Government of India, New Delhi.
- 4.9) Roles and the responsibilities of Comprehensive Dam Safety Review Panels will be as per **Annexure-II**

5. Site visits and inspection

- 5.1) The CDSRP shall visit and inspect the assigned specified dams within their jurisdiction.
- 5.2) Prior to the visit of CDSRP, the concerned Superintending Engineer of the specified dam shall collect, compile and provide all necessary technical details to the CDSRP, as mentioned in **Annexure-III**.
- 5.3) A separate final report shall be prepared by CDSRP for each inspected dam, within 2 months of inspection and shall be submitted to Chief Engineer, State Dam Safety Organization, Nashik.

5.4) After each dam inspection by CDSRP, a wrap up meeting shall be arranged by the concerned dam owner which shall be attended by all concerned technical field officers and if possible, by the concerned Chief Engineer.

5.5) The concerned field Chief Engineer shall prioritize the specified dams to be inspected and visited by CDSRP and shall provide this priority list to concerned CDSRP.

6. Supplementary Services.

6.1) The concerned Executive Engineer of the dam will act as Convener for the Comprehensive Dam safety Review panel (CDSRP).

6.2) Convener of the concerned CDSRP panel will be responsible for correspondence between the Comprehensive Dam safety Review panel (CDSRP), State Dam Safety Organization (SDSO) & Govt. of Maharashtra.

6.3) Convener of the concerned panel will arrange for Steno Typist and other necessary arrangements for experts of panel for report preparation.

6.4) Convener of each Comprehensive Dam Safety Review Panel will provide all necessary assistance including services of field staff concerned with dam operation & maintenance to the panel as & when requested by the panel.

6.5) Remuneration and various facilities to be paid to Chairman as well as other members / experts of Comprehensive Dam Safety Review panel (CDSRP) will be as per **Annexure-IV**.

7. Expenditure.

The expenditure on Comprehensive Dam Safety Review Panels (CDSRP) will be debited from the following account heads created for various dam safety works to be carried out as per provisions of Dam Safety Act, 2021.

Sr. No.	Irrigation Development Corporation	Account Head
1	Maharashtra Krishna Valley Development Corporation , Pune	
	a) Rest of Maharashtra	2700 0154
	b) Marathwada Region	2700 0163
2	Vidarbha Irrigation Development Corporation, Nagpur	2700 0172
3	Tapi Irrigation Development Corporation , Jalgaon	2700 0181
4	Konkan Irrigation Development Corporation, Thane	2700 0192
5	Godavari Marathwada Irrigation Development Corporation,	

	Chatrapati Sambhajinagar	
	a) Marathwada Region	2700 0207
	b) Rest of Maharashtra	2700 0216

Remunerations and other facilities mentioned in this Government Resolution shall not be taken as pre-example for new decision.

This Government Resolution is issued after taking consent from Planning Department vide U.O.R. No. 247/Desk 1433, Dated 18.06.2024 and Finance Department vide U.O.R. No. 296/2024/Exp-12 Dated 03.03.2025 and available on the website of Government of Maharashtra www.maharashtra.gov.in. Reference no. for this is 202506231650065927. This order has been signed digitally.

By Order and in the Name of Governor of Maharashtra,

End: Annexure I, II, III & IV

(N.G.Baser)
Superintending Engineer & Deputy Secretary
Government of Maharashtra

Copy to:

1. Hon. Chief Minister, Government of Maharashtra, Mantralaya, Mumbai.
2. Hon. Dy. Chief Minister (/Finance/Planning), Government of Maharashtra, Mantralaya, Mumbai.
3. Hon. Dy. Chief Minister (Urban Development/Housing.), Government of Maharashtra, Mantralaya, Mumbai.
4. Hon. Minister, Water Resources Department (Vidarbha, Tapi & Konkan Irrigation Development Corporation), Mantralaya, Mumbai.
5. Hon. Minister, Water Resources Department (Godavari & Krishna Valley Irrigation Development Corporation), Mantralaya, Mumbai.
6. Chairman/Dy. Chairman, Maharashtra Legislative Council.
7. Chairman/Dy. Chairman, Maharashtra Legislative Assembly.
8. Hon. Chief Secretary, Mantralaya, Mumbai.
9. Additional Chief Secretary, Finance Department, Government of Maharashtra, Mantralaya, Mumbai.
10. Additional Chief Secretary, Planning Department, Government of Maharashtra, Mantralaya, Mumbai.
11. Additional Chief Secretary, Water Resources Department, Mantralaya, Mumbai.
12. Secretary, (CADA), Water Resources Department, Mantralaya, Mumbai.
13. Secretary, (Project co-ordination), Water Resources Department, Mantralaya, Mumbai.
14. Director General, MERI, Nashik-4
15. Executive Director, MKVDC, Pune.
16. Executive Director, VIDC, Nagpur
17. Executive Director, GMIDC, Chatrapati Sambhajinagar.
18. Executive Director, TIDC, Jalgaon.
19. Executive Director, KIDC, Thane.

20. Internal Financial Advisor and Joint Secretary, Water Resources
Department, Mantralaya, Mumbai.
21. Chief Engineer, WR, Pune
22. Chief Engineer, SP, Pune
23. Chief Engineer, WR, Nagpur
24. Chief Engineer, WR, Amravati
25. Chief Engineer, SP, Amravati
26. Chief Engineer, TIDC, Jalgaon
27. Chief Engineer, NMR, Nashik
28. Chief Engineer, WR, Chatrapati Sambhajanagar.
29. Chief Engineer, CADA, Chatrapati Sambhajanagar.
30. Chief Engineer, WR, Konkan Region, Mumbai
31. Chief Engineer, Planning & Hydrology, Nashik
32. Superintending Engineer, DSO, Nashik
33. Select File (IM/Works)

ANNEXURE -I: Constitution of Comprehensive Dam Safety Review Panel

CDSRP - 1: MKVDC, Pune			
Sr. No	Name	Designation	Domain of Expertise
1	Shri D.N.Modak	Chairman	
2	Shri I.S.Chaudhary	Member	Dam Safety Expert
3	Dr. Sharad Govind Joshi	Member	Structural/Seismology
4	Dr. C. Krishnaiah	Member	Geo-Technical/ Geology/ Materials
5	Dr. Neena Isaac	Member	Hydrology/ Hydraulics/ Instrumentation
6	Shri K. Satayanarayana	Member	Mechanical
7	Shri Shivaji Bolbhat	Member	Construction Supervision/ Operation
8	Superintending Engineer, SDSO	Member	Ex-Officio
9	Concerned Superintending Engineer	Member Secretary	Ex-Officio

CDSRP - 2 VIDC, Nagpur			
Sr. No	Name	Designation	Domain of Expertise
1	Shri Rajeshkumar Shrivastav	Chairman	
2	Shri. J. M. Shaikh	Member	Dam Safety Expert
3	Shri. D.Shrinagesh	Member	Structural/Seismology
4	Shri. Gopal Dhawan	Member	Geo-Technical/ Geology/ Materials
5	Shri. Saran Aadhar	Member	Hydrology/ Hydraulics
6	Shri Tarapuram Sudhakar	Member	Mechanical
7	Shri K. S. Vemulakonda	Member	Construction Supervision/Operation
8	Superintending Engineer, SDSO	Member	Ex-Officio
9	Concerned Superintending Engineer	Member Secretary	Ex-Officio

CDSRP – 3 GMIDC - CE, WR, Chhatrapati Sambhajinagar			
Sr No	Name	Designation	Domain of Expertise
1	Shri. R.K.Gupta	Chairman	
2	Shri. D. D. Tawar	Member	Dam Safety Expert
3	Dr. Pranesh B. Mrunal	Member	Structural/Seismology
4	Shri. Mandapalli Raju	Member	Geo-Technical/ Geology/ Materials
5	Shri. N.K.Goel	Member	Hydrology/Hydraulics
6	Shri. Tarapuram Sudhakar	Member	Mechanical
7	Shri. M.R.Awalgaonkar	Member	Construction Supervision/Operation
8	Superintending Engineer, SDSO	Member	Ex-Officio
9	Concerned Superintending Engineer	Member Secretary	Ex-Officio

CDSRP - 4 GMIDC-CE & Chief Administrator, CADA, Chhatrapati Sambhajnagar			
Sr No	Name	Designation	Domain of Expertise
1	Shri. Vijay Saran	Chairman	
2	Shri. V.S.Ghogre	Member	Dam Safety Expert
3	Dr. Pranesh B. Mrunal	Member	Structural/Seismology
4	Shri. Mandapalli Raju	Member	Geo-Technical/ Geology/ Materials
5	Shri. N.K.Goel	Member	Hydrology/Hydraulics
6	Shri. Tarapuram Sudhakar	Member	Mechanical
7	Shri. M.R.Awalgaonkar	Member	Construction Supervision/Operation
8	Superintending Engineer, SDSO	Member	Ex-Officio
9	Concerned Superintending Engineer	Member Secretary	Ex-Officio

CDSRP-5 TIDC, JALGAON & CE, NMR, Nashik			
Sr No	Name	Designation	Domain of Expertise
1	Shri P.G. Mandade	Chairman	
2	Shri I. S. Chaudhary	Member	Dam Safety Expert
3	Shri D. Shrinagesh	Member	Structural/Seismology
4	Shri. Gopal Dhawan	Member	Geo-Technical/ Geology/ Materials
5	Shri. Saran Aadhar	Member	Hydrology/Hydraulics
6	Shri. Tarapuram Sudhakar	Member	Mechanical
7	Shri M. S. Amle	Member	Construction Supervision/Operation
8	Superintending Engineer, SDSO	Member	Ex-Officio
9	Concerned Superintending Engineer	Member Secretary	Ex-Officio

CDSRP-6 KIDC, Thane			
Sr No	Name	Designation	Domain of Expertise
1	Dr. P.K. Pawar	Chairman	
2	Shri. S. S. Waghmare	Member	Dam Safety Expert
3	Dr. Sharad Govind Joshi	Member	Structural/Seismology
4	Dr. C. Krishnaiah	Member	Geo-Technical/ Geology/ Materials
5	Dr. Neena Isaac	Member	Hydrology/Hydraulics/Instrumentation
6	Shri K. Satyanarayana	Member	Mechanical
7	Shri S. N. Kulkarni	Member	Construction Supervision/Operation
8	Superintending Engineer, SDSO	Member	Ex-Officio
9	Concerned Superintending Engineer	Member Secretary	Ex-Officio

Note:

- 1) In Case of Non-availability of any panel member, He / She can be replaced by competent expertise from State &/or experts list available with SDSO.
- 2) Field Chief Engineer / Superintending Engineer can take Judicious Decision regarding necessity of experts from the panel as per necessity of the Specified Dam to be inspected.

(N.G.Baser)
Superintending Engineer & Deputy Secretary
Government of Maharashtra

ANNEXURE-II:

Roles and the Responsibilities of Comprehensive Dam Safety Review Panel

The roles and the responsibilities shall include as under.

- (a) CDSRP members shall have the desire and ability to make a comprehensive Evaluation of all data related to the dam and shall make a thorough on-site examination. They should be capable of making in- depth evaluations and arriving at logical conclusions. CDSRP should be observant, have good analytical reasoning, and not be disconcerted when confronted with voluminous detail. They should be able to concentrate on safety considerations and conditions conducive to dam failures and be alert for changed conditions. Team members should be suspicious, inquisitive, non-complacent, methodical, and possess sound engineering judgment. They should have an independent view and avoid quick, unfounded conclusions. Operators and field personnel familiar with the dam and its operation should join the Team for the on-site examination. They should be capable of answering or obtaining answers to questions the Team may have concerning existing conditions and the operation of the dam.
- (b) Dam Inspection shall be carried out by CDSRP as per these Guidelines for Safety Inspection of Dams- covering inspection items as brought out in Annexure-III, and focusing on features, events and evidence as brought out in Annexure-III.
- (c) The CDSRP, will be advisory in function and provide an expert opinion on safety conditions of the dam and various studies conducted and give recommendations / suggestions for further improvement and rehabilitation requirements.
- (d) For implementation of any rehabilitation project for any dam, all necessary Evaluations must have been completed and the Evaluation panel's recommendations must have been discussed with the Chief Engineer and Senior Officers of Water Resources Department and Dam Safety Organisation.
- (e) Any rehabilitation work proposal to be undertaken by a dam owner must include the recommendations of CDSRP.
- (f) In case, where CDSRP, after the comprehensive dam safety evaluation recommends a remedial action, the State Dam Safety Organisation shall pursue with the concerned owner of the specified dam to ensure that the remedial measures are carried out in time, for which the concerned dam owner shall provide adequate funds.
- (g) In cases where there are unresolved points or issues that emerge between CDSRP and the owner of the dam, the matter shall be referred to the State Dam Safety Organisation (SDSO), and in case, no agreement is arrived at, the matter shall be referred to the Central Dam Safety Organisation (CDSO) which shall give required guidance wherever necessary and send their recommendations to the State Dam Safety Organisation (SDSO) for their implementation. The guidance/ suggestions/ recommendations of CDSO shall be binding on all parties.

(N.G.Baser)

Superintending Engineer & Deputy Secretary
Government of Maharashtra

ANNEXURE-III :

Details to be provided to CDSRP before Inspection:

A memorandum for dam inspection shall be prepared by the concerned dam manager/ Executive Engineer covering: the dam salient features; recommendations of earlier safety inspections and compliances; design flood revisions; understanding of present problems and anticipated remedial measures; and any difficulties being encountered in the operation and maintenance of dam. The memorandum shall be made available to each member of CDSRP team for examination at least one month ahead of proposed inspection.

If possible, owner agency must facilitate the CDSRP team to interact with experts who had been involved in construction stage of dam, important rehabilitations; any past Expert Group constituted for some need based unscheduled inspections etc. in order to have one to one interaction for comprehensive assessment of past issues.

The technical memorandum shall consist of all relevant details/data/drawings for the dam project to be inspected by the Panel of Experts and in general includes:

(a) General Information

- i) Scope of project
- ii) Basic data and salient features
- iii) Issues related to safety of dam
- iv) Previous Inspection reports
- v) Details of key personnel
- vi) All manuals i.e. Reservoir Operation Manual, Operation and Maintenance Manual, Security Manual etc.
- vii) Emergency preparedness - Communications, Auxiliary Power, Downstream Warning system & Security of site.

(b) Hydrology

- i) Description of drainage basin
- ii) Original inflow design flood report
- iii) Highest observed inflow flood along with date and time
- iv) Spillway capacity at FRL & original MWL
- v) Elevation-Area-Capacity of the reservoir
- vi) Bathymetry report/data if any, to assess present gross and live storage of dam

(c) Geology

- i) Dam site geology including geological reports
- ii) Quality and sufficiency of the geological investigations.
- iii) Special problems and their treatment
- iv) Reservoir competency as per geological report.
- v) Slope stability issues along reservoir rim.

(d) Layout including Drawings

- i) Dam
- ii) Spillway
- iii) Junction between Embankment & Concrete/Masonry dams
- iv) River/Canal outlets
- v) Instrumentation

(e) Dam and Spillway

- i) Special problems
- ii) Foundation treatment including treatment of faults/shear zones/ weak zones, curtain / consolidation grouting, drainage provisions, any other special treatment, cutoff trench, diaphragm walls etc.

- iii) Design criteria and result of stability analysis
- iv) Special studies (Finite element, Dynamic analysis etc.)
- v) Design and drawings of spillway gates, hoist arrangement, sluice gates, emergency gates, auxiliary gates, Evaluation of adequacy of strength of existing gates and hoisting arrangement especially in case older system not conforming to present design criteria if any, auxiliary power arrangement etc.
- vi) Adequacy of design - from dam safety considerations
- vii) Hydraulic design of Spillway and Energy Dissipation Arrangements including past model study reports if any.
- viii) Instrumentation - analysis and interpretation of instrumentation data including structural behavior reports.
- ix) Pre-construction material testing reports including adequacy of field and laboratory investigations, appropriateness of materials selected etc.
- x) Post-construction testing reports, if any.
- xi) Seismicity (Seismic Parameters approved by the National Committee on Seismic Design Parameters for Dams)
- (f) Construction history**
- (g) Dam incidents/failures, remedial measures/modifications undertaken**
- (h) Reservoir Operation & Regulation Plan**
 - i) General
 - ii) Reservoir filling
 - iii) Operation manual
 - iv) Water release protocol - normal condition and during floods.

All these pertinent records (including design records, construction records along with as-built drawings, recent operation and maintenance records along with instrumentation data) shall be made available at dam site during inspection by the dam manager/Executive Engineer for examination by the CDSRP team.

Further investigation may be required prior to concluding a comprehensive dam safety Evaluation. The investigation may include:

- i) Where insufficient data exists, the dam may have to be surveyed and new plans drawn
- ii) Sampling and testing of materials in the dam and its foundations in conjunction to the required geotechnical drilling and mapping.
- iii) Calculation of new revised design flood and flood routing studies, hydraulic model studies etc.
- iv) Any advance modeling to assess the exact behavior of dam and predicted forecasting of critical parameters; may require in-situ various material properties as input
- v) Revision of seismic loadings

(N.G.Baser)
 Superintending Engineer & Deputy Secretary
 Government of Maharashtra

ANNEXURE-IV

Remuneration and various facilities to be paid to Chairman & to members / experts of Comprehensive Dam Safety Review Panel :

Remuneration and various facilities to be paid to Chairman as well as other members / experts of Comprehensive Dam Safety Review panels (CDSRP) constituted vide this GR will be as per DSRP constituted under DRIP Phase II & III vide W.R.D. Govt. Resolution No. Misc. 2017/ (139/17)/ IMW, Mantralaya, Mumbai Dtd. 12/06/2019 as presented in table below and subsequent revisions if any.

All expenditures incurred for the Comprehensive Dam Safety Evaluation of the specified dam under the Water Resources Department shall be made from the various heads created vide Government Marathi letter Dtd. 15/01/2024, as per the type of project, i.e. Major, Medium, and Minor.

1	Remuneration as setting fee for independent CDSRP members/ experts.	<ul style="list-style-type: none">➤ Rs. 7500/- per day for chairman subject to maximum of Rs. 75000/- per month.➤ Rs. 6500/- per day for members / experts subject to maximum of Rs. 65000/- per month.➤ This remuneration is for each day of dam visit / Meeting including journey /travel period.➤ If total remuneration in a month as per actual work is less than maximum limit, remuneration will be paid for actual days of working.
2	Air /Train Travel	<ul style="list-style-type: none">➤ Economy class by any airline for journey by Air.➤ Second class II tier AC for train travel.➤ As per Equivalent Post officiated as per prevailing TA & DA Rules in the State.
3	Accommodation	<ul style="list-style-type: none">➤ Eligible for Government Rest House / Inspection Bungalow/ Circuit House.➤ If suitable accommodation as mentioned above is not available, the Water Resources Department through concerned Member Secretary of the panel may book hotel rooms & will make payment as per actual hotel accommodation availed cost with the ceiling of maximum Rs.5000/- per day at places other than the project site during their official visits.➤ No amount will be paid to the panel Chairman / Members / Experts towards cost of accommodation and travel.
4	Food	<ul style="list-style-type: none">➤ Breakfast, working lunch, tea/coffee & dinner will be provided by the Water Resources Department through concerned Member Secretary of the panel to chairman/ members/experts of the DSRP during accommodation period only.

5	Local Transportation	<ul style="list-style-type: none"> ➤ Local transportation facility from the place of accommodation to dam site / meeting location will be provided by the Water Resources Department through concerned Member Secretary of the CDSRP/Dam Manager in the form of Government vehicles. ➤ If Government vehicles are not available, then private vehicles will be provided.
6	Members of the CDSRP employed with Central / State Govt. Departments / PSUs	<ul style="list-style-type: none"> ➤ Eligible for travelling allowance & daily allowance as per concerned Central / State Govt. Departments / PSUs prevailing regulations as per their designation. ➤ Remuneration as mentioned in 1 is not applicable.

(N.G.Baser)
 Superintending Engineer & Deputy Secretary
 Government of Maharashtra